

07/30/14



Technical Report for

Stantec Consulting Services Inc.

Sunoco - Marcus Hook Facility, PA

213402353.204

Accutest Job Number: JB54616

Sampling Dates: 12/03/13 - 12/05/13

Report to:

Stantec

Lisa. Votta@stantec.com

ATTN: Lisa Votta

Total number of pages in report: 44



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

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Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, IL, IN, KS, KY, LA, MA, MD, MI, MT, NC, OH VAP (CL0056), PA, RI, SC, TN, VA, WV, DoD ELAP (L-A-B L2248)

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Sample Summary

Stantec Consulting Services Inc.

Job No: JB54616

Sunoco - Marcus Hook Facility, PA

Project No: 213402353.204

Sample Number	Collected Date	Time By	Received	Matr Code		Client Sample ID
JB54616-1	12/03/13	14:15 JC	12/03/13	so	Soil	MH615-1(3.0)
JB54616-2	12/03/13	14:25 JC	12/03/13	so	Soil	MH615-2(3.0)
JB54616-3	12/03/13	14:35 JC	12/03/13	so	Soil	MH615-3(3.0)
JB54616-4	12/03/13	14:40 JC	12/03/13	so	Soil	MH615-4(3.0)
JB54616-5	12/03/13	14:45 JC	12/03/13	so	Soil	MH615-5(3.0)
JB54616-6	12/03/13	14:50 JC	12/03/13	so	Soil	MH615-6(2.25)
JB54616-7	12/05/13	14:05 JC	12/05/13	so	Soil	MH615-7(5.0)

Soil samples reported on a dry weight basis unless otherwise indicated on result page.





CASE NARRATIVE / CONFORMANCE SUMMARY

Client: Stantec Consulting Services Inc. Job No JB54616

Site: Sunoco - Marcus Hook Facility, PA Report Date 12/24/2013 9:35:55 A

Between 12/03/2013 and 12/05/2013, 7 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a temperature of 3.6 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of JB54616 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix: SO Batch ID: VD8821

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB54190-2TMS, JB54190-2TMSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- JB54616-1 for Toluene-D8: Outside control limits due to matrix interference.

Matrix: SO Batch ID: VD8823

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB54616-5MS, JB54616-5MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix: SO Batch ID: VD8825

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB54915-1MS, JB54915-1MSD were used as the QC samples indicated.

Matrix: SO Batch ID: VD8827

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB54658-28MS, JB54658-28MSD were used as the QC samples indicated.

Matrix: SO Batch ID: VX6171

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB54471-26DUP, JB54471-28MS were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- JB54616-4 for Toluene-D8: Outside control limits due to matrix interference.

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB54555-1MS, JB54555-2DUP, JB54555-1MS were used as the QC samples indicated.

Batch ID:

- All method blanks for this batch meet method specific criteria.
- RPD(s) for Duplicate for Benzene are outside control limits for sample JB54555-2DUP. High RPD due to low concentration
 of hit

VX6175

JB54555-2DUP for Dibromofluoromethane: Outside control limits due to matrix interference.

Matrix: SO

Volatiles by GCMS By Method SW846 8260B

Matrix: SO Batch ID: VX6175

JB54555-1MS for Dibromofluoromethane: Outside control limits due to matrix interference.

Extractables by GCMS By Method SW846 8270D

Matrix: SO

Batch ID: OP71150

- All samples were extracted within the recommended method holding time.
- Sample(s) JB54616-1MS, JB54616-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix: SO

Batch ID: OP71216

- All samples were extracted within the recommended method holding time.
- Sample(s) JB54835-1MS, JB54835-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Volatiles by GC By Method SW846 8011

Matrix: SO

Batch ID: M:0

M:OP36082

- The data for SW846 8011 meets quality control requirements.
- JB54616-1: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB54616-2: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB54616-3: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB54616-4: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB54616-5: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB54616-6: Analysis performed at Accutest Laboratories, Marlborough, MA.

Matrix: SO

Batch ID: M:OP36152

- The data for SW846 8011 meets quality control requirements.
- JB54616-7: Analysis performed at Accutest Laboratories, Marlborough, MA.

Metals By Method SW846 6010C

Matrix: SO

Batch ID: M:MP22244

- The data for SW846 6010C meets quality control requirements.
- JB54616-7 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB54616-5 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB54616-4 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB54616-3 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB54616-2 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB54616-1 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB54616-6 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.

Wet Chemistry By Method SM21 2540 B MOD.

Matrix: SO

Batch ID: M:GN45445

- The data for SM21 2540 B MOD. meets quality control requirements.
- JB54616-7 for Solids, Percent: Analysis performed at Accutest Laboratories, Marlborough, MA.

Wet Chemistry By Method SM2540 G-97

Matrix: SO Batch ID: GN96209

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover

[■] The data for SM2540 G-97 meets quality control requirements.



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Accutest New Jersey Job No JB54616

Site: SECORPAE: Sunoco - Marcus Hook Facility, PA Report Date 12/20/2013 2:10:53 PM

7 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 12/03/2013 and were received at Accutest on 12/03/2013 properly preserved, at 0.3 Deg. C and intact. These Samples received an Accutest job number of JB54616. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Extractables by GCMS By Method SW846 8270D

Matrix: SO Batch ID: OP36142

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB54835-1MS, JB54835-1MSD were used as the QC samples indicated.

Volatiles by GC By Method SW846 8011

Matrix: SO Batch ID: OP36082

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC26889-1MS, MC26889-1MSD were used as the QC samples indicated.
- JB54616-2, 4, 5 for Bromofluorobenzene (S): Outside control limits due to possible matrix interference.

Matrix: SO Batch ID: OP36152

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB54835-1MS, JB54835-1MSD were used as the QC samples indicated.

Metals By Method SW846 6010C

Matrix: SO Batch ID: MP22244

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC26955-7MS, MC26955-7MSD, MC26955-7SDL were used as the QC samples for metals.
- MP22244-SD1 for Lead: Serial dilution indicates possible matrix interference.

Wet Chemistry By Method SM21 2540 B MOD.

Matrix: SO Batch ID: GN45445

Sample(s) MC27002-23DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(JB54616).

Summary of Hits
Job Number: JB54616
Account: Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA
12/03/13 thru 12/05/13

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
JB54616-1 MH615-1(3.0)					
Benzene	90500	22000	2800	ug/kg	SW846 8260B
Toluene	11300000	110000	16000	ug/kg	SW846 8260B
Ethylbenzene	332000	22000	3800	ug/kg	SW846 8260B
Xylene (total)	2670000	22000	3900	ug/kg	SW846 8260B
Isopropylbenzene	2970	550	16	ug/kg	SW846 8260B
1,2,4-Trimethylbenzene	2660	550	17	ug/kg	SW846 8260B
1,3,5-Trimethylbenzene	2070	550	24	ug/kg	SW846 8260B
Naphthalene	20.9 J	40	11	ug/kg	SW846 8270D
Lead ^a	9.4	0.99	0.17	mg/kg	SW846 6010C
JB54616-2 MH615-2(3.0)					
Benzene	30.0	0.87	0.11	ug/kg	SW846 8260B
Toluene	8650	100	15	ug/kg	SW846 8260B
Ethylbenzene	2110	100	18	ug/kg	SW846 8260B
Xylene (total)	16600	100	19	ug/kg	SW846 8260B
sopropylbenzene	3.8 J	4.3	0.13	ug/kg	SW846 8260B
1,2,4-Trimethylbenzene	3.8 J	4.3	0.14	ug/kg	SW846 8260B
1,3,5-Trimethylbenzene	3.1 J	4.3	0.19	ug/kg	SW846 8260B
Lead ^a	7.6	0.97	0.16	mg/kg	SW846 6010C
JB54616-3 MH615-3(3.0)					
Benzene	490	120	15	ug/kg	SW846 8260B
Гoluene	72900	1200	170	ug/kg	SW846 8260B
Ethylbenzene	22400	120	21	ug/kg	SW846 8260B
Xylene (total)	210000	1200	210	ug/kg	SW846 8260B
sopropylbenzene	89.9	5.2	0.15	ug/kg	SW846 8260B
1,2,4-Trimethylbenzene	24.4	5.2	0.17	ug/kg	SW846 8260B
1,3,5-Trimethylbenzene	8.2	5.2	0.23	ug/kg	SW846 8260B
Lead a	6.6	1.0	0.17	mg/kg	SW846 6010C
JB54616-4 MH615-4(3.0)					
Benzene	30.0	0.95	0.12	ug/kg	SW846 8260B
Гoluene	1110	110	16	ug/kg	SW846 8260B
Ethylbenzene	187	0.95	0.17	ug/kg	SW846 8260B
Xylene (total)	982	110	20	ug/kg	SW846 8260B
(sopropylbenzene	22.2	4.7	0.14	ug/kg	SW846 8260B
Naphthalene	5.3	4.7	0.17	ug/kg	SW846 8260B
1,2,4-Trimethylbenzene	2.3 J	4.7	0.15	ug/kg	SW846 8260B
1,3,5-Trimethylbenzene	1.6 J	4.7	0.21	ug/kg	SW846 8260B
Lead ^a	7.0	1.0	0.17	mg/kg	SW846 6010C

Summary of Hits

Job Number: JB54616

Account: Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Collected: 12/03/13 thru 12/05/13

Lab Sample ID Client Analyte	Sample ID Result/ Qual	RL	MDL	Units	Method
JB54616-5 MH613	5-5(3.0)				
Benzene	114 J	120	15	ug/kg	SW846 8260B
Toluene	324	120	17	ug/kg	SW846 8260B
Ethylbenzene	36.9 J	120	20	ug/kg	SW846 8260B
Xylene (total)	148	120	21	ug/kg	SW846 8260B
Isopropylbenzene	90.0 J	580	17	ug/kg	SW846 8260B
Lead ^a	10.3	1.0	0.17	mg/kg	SW846 6010C
JB54616-6 MH61	5-6(2.25)				
Toluene	2.9	0.92	0.13	ug/kg	SW846 8260B
Xylene (total)	1.4	0.92	0.16	ug/kg	SW846 8260B
Benzo(a)anthracene	19.7 J	37	12	ug/kg	SW846 8270D
Benzo(a)pyrene	24.8 J	37	11	ug/kg	SW846 8270D
Benzo(b)fluoranthene	23.2 J	37	12	ug/kg	SW846 8270D
Benzo(g,h,i)perylene	34.9 J	37	14	ug/kg	SW846 8270D
Chrysene	18.1 J	37	12	ug/kg	SW846 8270D
Pyrene	37.5	37	14	ug/kg	SW846 8270D
Lead a	24.4	0.96	0.16	mg/kg	SW846 6010C
JB54616-7 MH618	5-7(5.0)				
Benzene	357	100	13	ug/kg	SW846 8260B
Toluene	292000	5000	710	ug/kg	SW846 8260B
Ethylbenzene	123000	5000	880	ug/kg	SW846 8260B
Xylene (total)	1210000	5000	890	ug/kg	SW846 8260B
Isopropylbenzene	2670	500	15	ug/kg	SW846 8260B
Naphthalene	587	500	18	ug/kg	SW846 8260B
1,2,4-Trimethylbenzene	1680	500	16	ug/kg	SW846 8260B
1,3,5-Trimethylbenzene	1380	500	22	ug/kg	SW846 8260B
Anthracene	25.5 J	37	13	ug/kg	SW846 8270D
Benzo(a)pyrene	52.5	37	11	ug/kg	SW846 8270D
Benzo(b)fluoranthene	34.5 J	37	12	ug/kg	SW846 8270D
Benzo(g,h,i)perylene	96.7	37	14	ug/kg	SW846 8270D
Phenanthrene	111	37	17	ug/kg	SW846 8270D
Pyrene	339	37	14	ug/kg	SW846 8270D
Lead a	12.4	0.93	0.16	mg/kg	SW846 6010C

⁽a) Analysis performed at Accutest Laboratories, Marlborough, MA.





Sample Results		
Report of Analysis		



4

Report of Analysis

 Client Sample ID:
 MH615-1(3.0)

 Lab Sample ID:
 JB54616-1
 Date Sampled:
 12/03/13

 Matrix:
 SO - Soil
 Date Received:
 12/03/13

 Method:
 SW846 8260B
 Percent Solids:
 83.7

Project: Sunoco - Marcus Hook Facility, PA

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1	D215957.D	1	12/06/13	CM	n/a	n/a	VD8821
Run #2	D216006.D	1	12/09/13	CM	n/a	n/a	VD8823
Run #3	D216041.D	1	12/10/13	CM	n/a	n/a	VD8825

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.0 g	10.0 ml	100 ul
Run #2	6.0 g	10.0 ml	0.50 ul
Run #3	6.0 g	10.0 ml	0.10 ul

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	s Q
71-43-2	Benzene	90500 a	22000	2800	ug/kg	{
108-88-3	Toluene	11300000 b	110000	16000	ug/kg	
100-41-4	Ethylbenzene	332000 a	22000	3800	ug/kg	•
1330-20-7	Xylene (total)	2670000 a	22000	3900	ug/kg	•
1634-04-4	Methyl Tert Butyl Ether	ND	110	37	ug/kg	•
107-06-2	1,2-Dichloroethane	ND	110	35	ug/kg	•
98-82-8	Isopropylbenzene	2970	550	16	ug/kg	
91-20-3	Naphthalene	ND	550	20	ug/kg	•
95-63-6	1,2,4-Trimethylbenzene	2660	550	17	ug/kg	•
108-67-8	1,3,5-Trimethylbenzene	2070	550	24	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run#	# 3	Limits
1868-53-7	Dibromofluoromethane	92%	96%	98%		59-130 %
17060-07-0	1,2-Dichloroethane-D4	104%	110%	111%	ó	65-123%
2037-26-5	Toluene-D8	65% ^c	112%	113%	ó	80-124%
460-00-4	4-Bromofluorobenzene	102%	97%	95%		71-132%

- (a) Result is from Run# 2
- (b) Result is from Run# 3
- (c) Outside control limits due to matrix interference.

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



4

Report of Analysis

Client Sample ID: MH615-1(3.0)
Lab Sample ID: JB54616-1
Matrix: SO - Soil

Method: SW846 8270D SW846 3550C

Project: Sunoco - Marcus Hook Facility, PA

Date Sampled: 12/03/13
Date Received: 12/03/13
Percent Solids: 83.7

File ID DF **Analytical Batch** Analyzed By **Prep Date Prep Batch** 12/04/13 OP71150 EF5474 Run #1 F31050.D 1 12/05/13 JL Run #2

Run #1 30.0 g 1.0 ml

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	40	14	ug/kg	
56-55-3	Benzo(a)anthracene	ND	40	13	ug/kg	
50-32-8	Benzo(a)pyrene	ND	40	12	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	40	13	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	40	15	ug/kg	
218-01-9	Chrysene	ND	40	13	ug/kg	
86-73-7	Fluorene	ND	40	13	ug/kg	
91-20-3	Naphthalene	20.9	40	11	ug/kg	J
85-01-8	Phenanthrene	ND	40	18	ug/kg	
129-00-0	Pyrene	ND	40	15	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
4165-60-0	Nitrobenzene-d5	69%		10-1	10%	
321-60-8	2-Fluorobiphenyl	70 %		17-1	10%	
1718-51-0	Terphenyl-d14	78 %		30-1	24%	

ND = Not detected MD

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

 $B = \ Indicates \ analyte \ found \ in \ associated \ method \ blank$



Report of Analysis

By

AMA

Client Sample ID: MH615-1(3.0)
Lab Sample ID: JB54616-1
Matrix: SO - Soil

Method: SW846 8011 SW846 8011

Project: Sunoco - Marcus Hook Facility, PA

DF

1

Date Sampled: 12/03/13 Date Received: 12/03/13 Percent Solids: 83.7

Prep Date Prep Batch Analytical Batch 12/06/13 M:OP36082 M:GYZ7427

Initial Weight Final Volume Run #1 30.0 g 50.0 ml

File ID

YZ86543.D

Run #2

Run #1 a

Run #2

CAS No. Compound Result RL MDL Units Q

Analyzed

12/07/13

106-93-4 1,2-Dibromoethane ND 3.0 1.1 ug/kg

CAS No. Surrogate Recoveries Run# 1 Run# 2 Limits

 460-00-4
 Bromofluorobenzene (S)
 130%
 61-167%

 460-00-4
 Bromofluorobenzene (S)
 96%
 61-167%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank N = Indicates presumptive evidence of a compound



Report of Analysis

Client Sample ID: MH615-1(3.0) Lab Sample ID: JB54616-1 Matrix: SO - Soil

JB54616-1 Date Sampled: 12/03/13 SO - Soil Date Received: 12/03/13 Percent Solids: 83.7

Project: Sunoco - Marcus Hook Facility, PA

Metals Analysis

Analyte Result RL**MDL** Units DF Prep Analyzed By Method **Prep Method** Lead a SW846 3050B ² 0.9912/12/13 12/13/13 AMA SW846 6010C ¹ 9.4 0.17 mg/kg 1

(1) Instrument QC Batch: M:MA16557(2) Prep QC Batch: M:MP22244

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit MDL = Method Detection Limit U = Indicates a result < MDL

B = Indicates a result > = MDL but < RL



Report of Analysis

 Client Sample ID:
 MH615-2(3.0)

 Lab Sample ID:
 JB54616-2
 Date Sampled:
 12/03/13

 Matrix:
 SO - Soil
 Date Received:
 12/03/13

 Method:
 SW846 8260B
 Percent Solids:
 83.6

Project: Sunoco - Marcus Hook Facility, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X142667.D	1	12/05/13	NT	n/a	n/a	VX6171
Run #2	D215950.D	1	12/06/13	CM	n/a	n/a	VD8821

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.9 g		
Run #2	6.3 g	10.0 ml	100 ul

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	30.0	0.87	0.11	ug/kg	
108-88-3	Toluene	8650 a	100	15	ug/kg	
100-41-4	Ethylbenzene	2110 a	100	18	ug/kg	
1330-20-7	Xylene (total)	16600 a	100	19	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.87	0.30	ug/kg	
107-06-2	1,2-Dichloroethane	ND	0.87	0.28	ug/kg	
98-82-8	Isopropylbenzene	3.8	4.3	0.13	ug/kg	J
91-20-3	Naphthalene	ND	4.3	0.16	ug/kg	•
95-63-6	1,2,4-Trimethylbenzene	3.8	4.3	0.14	ug/kg	J
108-67-8	1,3,5-Trimethylbenzene	3.1	4.3	0.19	ug/kg	J
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	108%	94%	59-1	30%	
17060-07-0	1,2-Dichloroethane-D4	109%	109%	65-1	23%	
2037-26-5	Toluene-D8	113%	112%	80-1	24%	
460-00-4	4-Bromofluorobenzene	111%	95%	71-1	32 %	

(a) Result is from Run# 2

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

 $B = \mbox{ Indicates analyte found in associated method blank } \\ N = \mbox{ Indicates presumptive evidence of a compound}$



JB54616

Report of Analysis

By

JL

Client Sample ID: MH615-2(3.0)
Lab Sample ID: JB54616-2
Matrix: SO - Soil

File ID

P80506.D

Method: SW846 8270D SW846 3550C

Project: Sunoco - Marcus Hook Facility, PA

DF

1

Date Sampled: 12/03/13 Date Received: 12/03/13 Percent Solids: 83.6

Prep Date Prep Batch Analytical Batch 12/04/13 OP71150 EP3428

Run #1 Run #2

Initial Weight Final Volume Run #1 30.9 g 1.0 ml

Run #2

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	39	14	ug/kg	
56-55-3	Benzo(a)anthracene	ND	39	13	ug/kg	
50-32-8	Benzo(a)pyrene	ND	39	12	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	39	13	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	39	14	ug/kg	
218-01-9	Chrysene	ND	39	13	ug/kg	
86-73-7	Fluorene	ND	39	13	ug/kg	
91-20-3	Naphthalene	ND	39	11	ug/kg	
85-01-8	Phenanthrene	ND	39	18	ug/kg	
129-00-0	Pyrene	ND	39	15	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
4165-60-0	Nitrobenzene-d5	97%		10-1	10%	
321-60-8	2-Fluorobiphenyl	76 %		17-1	10%	
1718-51-0	Terphenyl-d14	85%		30-1	24%	

Analyzed

12/05/13

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

 $B = \ Indicates \ analyte \ found \ in \ associated \ method \ blank$

 $N = \ Indicates \ presumptive \ evidence \ of \ a \ compound$



Report of Analysis

Page 1 of 1

Client Sample ID: MH615-2(3.0)
Lab Sample ID: JB54616-2

 Lab Sample ID:
 JB54616-2
 Date Sampled: 12/03/13

 Matrix:
 SO - Soil
 Date Received: 12/03/13

 Method:
 SW846 8011
 SW846 8011
 Percent Solids: 83.6

Project: Sunoco - Marcus Hook Facility, PA

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch Run #1 a YZ86544.D 1 12/07/13 AMA 12/06/13 M:OP36082 M:GYZ7427

Run #2

Initial Weight Final Volume Run #1 30.5 g 50.0 ml

Run #2

CAS No. Compound Result RL MDL Units Q

106-93-4 1,2-Dibromoethane ND 2.9 1.1 ug/kg

CAS No. Surrogate Recoveries Run# 1 Run# 2 Limits

 460-00-4
 Bromofluorobenzene (S)
 110%
 61-167%

 460-00-4
 Bromofluorobenzene (S)
 24% b
 61-167%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Outside control limits due to possible matrix interference.

ND = Not detected

MDL = Method Detection Limit

RL = **Reporting Limit**

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



4

Report of Analysis

Client Sample ID: MH615-2(3.0)
Lab Sample ID: JB54616-2
Matrix: SO - Soil

Date Sampled: 12/03/13 Date Received: 12/03/13 Percent Solids: 83.6

Project: Sunoco - Marcus Hook Facility, PA

Metals Analysis

Analyte Result RL**MDL** Units DF Prep Analyzed By Method **Prep Method** Lead a mg/kg 1 SW846 3050B ² 7.6 0.97 12/12/13 12/13/13 AMA SW846 6010C ¹ 0.16

(1) Instrument QC Batch: M:MA16557(2) Prep QC Batch: M:MP22244

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit MDL = Method Detection Limit U = Indicates a result < MDL

B = Indicates a result > = MDL but < RL



Report of Analysis

Client Sample ID: MH615-3(3.0)
Lab Sample ID: JB54616-3 Date Sampled: 12/03/13
Matrix: SO - Soil Date Received: 12/03/13
Method: SW846 8260B Percent Solids: 81.1

Project: Sunoco - Marcus Hook Facility, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X142668.D	1	12/05/13	NT	n/a	n/a	VX6171
Run #2	D215956.D	1	12/06/13	CM	n/a	n/a	VD8821
Run #3	D216003.D	1	12/09/13	CM	n/a	n/a	VD8823

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.9 g		
Run #2	5.7 g	10.0 ml	100 ul
Run #3	5.7 g	10.0 ml	10.0 ul

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	490 a	120	15	ug/kg	{
108-88-3	Toluene	72900 b	1200	170	ug/kg	5
100-41-4	Ethylbenzene	22400 a	120	21	ug/kg	{
1330-20-7	Xylene (total)	210000 b	1200	210	ug/kg	{
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.36	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.34	ug/kg	
98-82-8	Isopropylbenzene	89.9	5.2	0.15	ug/kg	
91-20-3	Naphthalene	ND	5.2	0.19	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	24.4	5.2	0.17	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	8.2	5.2	0.23	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run	# 3	Limits
1868-53-7	Dibromofluoromethane	110%	93%	97%		59-130 %
17060-07-0	1,2-Dichloroethane-D4	109%	109%	109%	ó	65-123%
2037-26-5	Toluene-D8	118%	112%	112%	ó	80-124%
460-00-4	4-Bromofluorobenzene	110%	95%	93%		71-132%

(a) Result is from Run# 2

(b) Result is from Run# 3

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Report of Analysis

Client Sample ID: MH615-3(3.0)
Lab Sample ID: JB54616-3
Matrix: SO - Soil

Method: SW846 8270D SW846 3550C

Project: Sunoco - Marcus Hook Facility, PA

Date Sampled: 12/03/13
Date Received: 12/03/13
Percent Solids: 81.1

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch Run #1 P80507.D 1 12/05/13 JL 12/04/13 OP71150 EP3428

Run #2

Initial Weight Final Volume
Run #1 30.5 g 1.0 ml

Run #2

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	40	14	ug/kg	
56-55-3	Benzo(a)anthracene	ND	40	13	ug/kg	
50-32-8	Benzo(a)pyrene	ND	40	12	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	40	14	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	40	15	ug/kg	
218-01-9	Chrysene	ND	40	14	ug/kg	
86-73-7	Fluorene	ND	40	13	ug/kg	
91-20-3	Naphthalene	ND	40	11	ug/kg	
85-01-8	Phenanthrene	ND	40	18	ug/kg	
129-00-0	Pyrene	ND	40	16	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
4165-60-0	Nitrobenzene-d5	96%		10-1	10%	
321-60-8	2-Fluorobiphenyl	77%		17-1	10%	
1718-51-0	Terphenyl-d14	84%		30-1	24%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

 $B = \ Indicates \ analyte \ found \ in \ associated \ method \ blank$



Report of Analysis

Client Sample ID: MH615-3(3.0) Lab Sample ID: JB54616-3 Matrix: SO - Soil

Method: SW846 8011 SW846 8011

Sunoco - Marcus Hook Facility, PA **Project:**

Date Sampled: 12/03/13 Date Received: 12/03/13

Percent Solids: 81.1

File ID DF **Prep Date Analytical Batch** Analyzed By **Prep Batch** 12/06/13 M:OP36082 Run #1 a YZ86545.D 1 12/07/13 **AMA** M:GYZ7427

Run #2

Final Volume Initial Weight Run #1 50.0 ml 31.0 g

Run #2

CAS No. Compound **MDL** Units Result RLQ

106-93-4 1,2-Dibromoethane ND 3.0 1.1 ug/kg

CAS No. **Surrogate Recoveries** Run#1 Run# 2 Limits

460-00-4 Bromofluorobenzene (S) 127% 61-167% 460-00-4 Bromofluorobenzene (S) 63% 61-167%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



4

Report of Analysis

Client Sample ID: MH615-3(3.0)
Lab Sample ID: JB54616-3
Matrix: SO - Soil

JB54616-3 Date Sampled: 12/03/13 SO - Soil Date Received: 12/03/13 Percent Solids: 81.1

Project: Sunoco - Marcus Hook Facility, PA

Metals Analysis

Analyte Result RL**MDL** Units DF Prep Analyzed By Method **Prep Method** Lead a SW846 3050B ² 12/12/13 12/13/13 AMA SW846 6010C ¹ 6.6 1.0 0.17 mg/kg 1

(1) Instrument QC Batch: M:MA16557(2) Prep QC Batch: M:MP22244

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit MDL = Method Detection Limit U = Indicates a result < MDL

B = Indicates a result > = MDL but < RL



4

Report of Analysis

 Client Sample ID:
 MH615-4(3.0)

 Lab Sample ID:
 JB54616-4
 Date Sampled:
 12/03/13

 Matrix:
 SO - Soil
 Date Received:
 12/03/13

 Method:
 SW846 8260B
 Percent Solids:
 81.0

Project: Sunoco - Marcus Hook Facility, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X142669.D	1	12/05/13	NT	n/a	n/a	VX6171
Run #2	D216001.D	1	12/09/13	CM	n/a	n/a	VD8823

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.5 g		
Run #2	6.1 g	10.0 ml	100 ul

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	30.0	0.95	0.12	ug/kg	
108-88-3	Toluene	1110 a	110	16	ug/kg	
100-41-4	Ethylbenzene	187	0.95	0.17	ug/kg	
1330-20-7	Xylene (total)	982 a	110	20	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.95	0.33	ug/kg	
107-06-2	1,2-Dichloroethane	ND	0.95	0.30	ug/kg	
98-82-8	Isopropylbenzene	22.2	4.7	0.14	ug/kg	
91-20-3	Naphthalene	5.3	4.7	0.17	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	2.3	4.7	0.15	ug/kg	J
108-67-8	1,3,5-Trimethylbenzene	1.6	4.7	0.21	ug/kg	J
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	106%	94%	59-1	30%	
17060-07-0	1,2-Dichloroethane-D4	104%	108%	65-1	23%	
2037-26-5	Toluene-D8	138% b	120%	80-1	24%	
460-00-4	4-Bromofluorobenzene	116%	94%	71-1	32%	

- (a) Result is from Run# 2
- (b) Outside control limits due to matrix interference.

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

 $B = \ Indicates \ analyte \ found \ in \ associated \ method \ blank$



4

Report of Analysis

Client Sample ID: MH615-4(3.0)
Lab Sample ID: JB54616-4
Matrix: SO - Soil

Method: SW846 8270D SW846 3550C

Project: Sunoco - Marcus Hook Facility, PA

Date Sampled: 12/03/13
Date Received: 12/03/13
Percent Solids: 81.0

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch Run #1 P80508.D 1 12/05/13 JL 12/04/13 OP71150 EP3428

Run #2

Initial Weight Final Volume Run #1 32.7 g 1.0 ml

Run #2

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	38	13	ug/kg	
56-55-3	Benzo(a)anthracene	ND	38	12	ug/kg	
50-32-8	Benzo(a)pyrene	ND	38	12	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	38	13	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	38	14	ug/kg	
218-01-9	Chrysene	ND	38	13	ug/kg	
86-73-7	Fluorene	ND	38	12	ug/kg	
91-20-3	Naphthalene	ND	38	10	ug/kg	
85-01-8	Phenanthrene	ND	38	17	ug/kg	
129-00-0	Pyrene	ND	38	14	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
4165-60-0	Nitrobenzene-d5	87 %		10-1	10%	
321-60-8	2-Fluorobiphenyl	76 %		17-1	10%	
1718-51-0	Terphenyl-d14	90%		30-1	24%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Report of Analysis

Page 1 of 1

Client Sample ID: MH615-4(3.0) Lab Sample ID: JB54616-4

Date Sampled: 12/03/13 Matrix: SO - Soil Date Received: 12/03/13 Method: SW846 8011 SW846 8011 Percent Solids: 81.0

Project: Sunoco - Marcus Hook Facility, PA

File ID DF Analyzed By **Prep Date Prep Batch Analytical Batch** 12/06/13 M:OP36082 Run #1 a YZ86546.D 1 12/07/13 **AMA** M:GYZ7427

Run #2

Initial Weight Final Volume Run #1 50.0 ml 30.1 g

Run #2

CAS No. Compound Units Result RL**MDL** Q

106-93-4 1,2-Dibromoethane ND 3.1 1.1 ug/kg

CAS No. **Surrogate Recoveries** Run#1 Run# 2 Limits

61-167% 460-00-4 Bromofluorobenzene (S) 112% 460-00-4 Bromofluorobenzene (S) 29% b 61-167%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Outside control limits due to possible matrix interference.

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Report of Analysis

Client Sample ID: MH615-4(3.0)
Lab Sample ID: JB54616-4
Matrix: SO - Soil

Date Sampled: 12/03/13 Date Received: 12/03/13 Percent Solids: 81.0

Project: Sunoco - Marcus Hook Facility, PA

Metals Analysis

Analyte Result RL**MDL** Units DF Prep Analyzed By Method **Prep Method** Lead a SW846 3050B ² 7.0 12/12/13 12/13/13 AMA SW846 6010C ¹ 1.0 0.17 mg/kg 1

(1) Instrument QC Batch: M:MA16557(2) Prep QC Batch: M:MP22244

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit MDL = Method Detection Limit U = Indicates a result < MDL

B = Indicates a result > = MDL but < RL



4

Report of Analysis

 Client Sample ID:
 MH615-5(3.0)

 Lab Sample ID:
 JB54616-5
 Date Sampled:
 12/03/13

 Matrix:
 SO - Soil
 Date Received:
 12/03/13

 Method:
 SW846 8260B
 Percent Solids:
 80.9

Project: Sunoco - Marcus Hook Facility, PA

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch
Run #1 D216002.D 1 12/09/13 CM n/a n/a VD8823

Run #2

Initial Weight Final Volume Methanol Aliquot
Run #1 5.9 g 10.0 ml 100 ul
Run #2

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	114	120	15	ug/kg	J
108-88-3	Toluene	324	120	17	ug/kg	
100-41-4	Ethylbenzene	36.9	120	20	ug/kg	J
1330-20-7	Xylene (total)	148	120	21	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	120	40	ug/kg	
107-06-2	1,2-Dichloroethane	ND	120	37	ug/kg	
98-82-8	Isopropylbenzene	90.0	580	17	ug/kg	J
91-20-3	Naphthalene	ND	580	21	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	580	19	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	580	26	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	95%		59-1	30%	
17060-07-0	1,2-Dichloroethane-D4	109%		65-1	23%	
2037-26-5	Toluene-D8	118%		80-1	24%	
460-00-4	4-Bromofluorobenzene	94%		71-1	32%	

ND = Not detected M1

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

 $B = \ Indicates \ analyte \ found \ in \ associated \ method \ blank$



Report of Analysis

Client Sample ID: MH615-5(3.0)
Lab Sample ID: JB54616-5
Matrix: SO - Soil

Method: SW846 8270D SW846 3550C

Project: Sunoco - Marcus Hook Facility, PA

Date Sampled: 12/03/13
Date Received: 12/03/13
Percent Solids: 80.9

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch Run #1 P80509.D 1 12/05/13 JL 12/04/13 OP71150 EP3428

Run #2

Initial Weight Final Volume Run #1 32.6 g 1.0 ml

Run #2

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	38	13	ug/kg	
56-55-3	Benzo(a)anthracene	ND	38	12	ug/kg	
50-32-8	Benzo(a)pyrene	ND	38	12	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	38	13	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	38	14	ug/kg	
218-01-9	Chrysene	ND	38	13	ug/kg	
86-73-7	Fluorene	ND	38	12	ug/kg	
91-20-3	Naphthalene	ND	38	10	ug/kg	
85-01-8	Phenanthrene	ND	38	17	ug/kg	
129-00-0	Pyrene	ND	38	15	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
4165-60-0	Nitrobenzene-d5	89%		10-1	10%	
321-60-8	2-Fluorobiphenyl	74%		17-1	10%	
1718-51-0	Terphenyl-d14	79 %		30-1	24%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

 $B = \ Indicates \ analyte \ found \ in \ associated \ method \ blank$



Report of Analysis

Client Sample ID: MH615-5(3.0) Lab Sample ID: JB54616-5 Matrix: SO - Soil

Method: SW846 8011 SW846 8011

Project: Sunoco - Marcus Hook Facility, PA **Date Sampled: 12/03/13** Date Received: 12/03/13

Percent Solids: 80.9

File ID DF **Prep Date** Analyzed By **Prep Batch Analytical Batch** 12/06/13 M:OP36082 Run #1 a YZ86547.D 1 12/07/13 **AMA** M:GYZ7427 Run #2

Initial Weight Final Volume Run #1 50.0 ml 30.1 g Run #2

CAS No. Compound Units Result RL**MDL** Q

106-93-4 1,2-Dibromoethane ND 3.1 1.1 ug/kg

CAS No. **Surrogate Recoveries** Run#1 Run# 2 Limits

460-00-4 Bromofluorobenzene (S) 61-167% 118% 460-00-4 Bromofluorobenzene (S) 38% b 61-167%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Outside control limits due to possible matrix interference.

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank N = Indicates presumptive evidence of a compound



4

Report of Analysis

Client Sample ID: MH615-5(3.0)
Lab Sample ID: JB54616-5
Matrix: SO - Soil

Date Sampled: 12/03/13 Date Received: 12/03/13 Percent Solids: 80.9

Project: Sunoco - Marcus Hook Facility, PA

Metals Analysis

Analyte Result RL**MDL** Units DF Prep Analyzed By Method **Prep Method** Lead a SW846 3050B ² 10.3 12/12/13 12/13/13 AMA SW846 6010C ¹ 1.0 0.17 mg/kg 1

(1) Instrument QC Batch: M:MA16557(2) Prep QC Batch: M:MP22244

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit MDL = Method Detection Limit U = Indicates a result < MDL

B = Indicates a result > = MDL but < RL



4

Report of Analysis

 Client Sample ID:
 MH615-6(2.25)

 Lab Sample ID:
 JB54616-6
 Date Sampled:
 12/03/13

 Matrix:
 SO - Soil
 Date Received:
 12/03/13

 Method:
 SW846 8260B
 Percent Solids:
 84.9

Project: Sunoco - Marcus Hook Facility, PA

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch Run #1 X142783.D 1 12/07/13 NT n/a n/a VX6175

Run #2

Initial Weight

Run #1 6.4 g

Run #2

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.92	0.12	ug/kg	
108-88-3	Toluene	2.9	0.92	0.13	ug/kg	
100-41-4	Ethylbenzene	ND	0.92	0.16	ug/kg	
1330-20-7	Xylene (total)	1.4	0.92	0.16	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.92	0.32	ug/kg	
107-06-2	1,2-Dichloroethane	ND	0.92	0.30	ug/kg	
98-82-8	Isopropylbenzene	ND	4.6	0.14	ug/kg	
91-20-3	Naphthalene	ND	4.6	0.17	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	4.6	0.15	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	4.6	0.20	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	110%		59-1	30%	
17060-07-0	1,2-Dichloroethane-D4	111%		65-1	23%	
2037-26-5	Toluene-D8	115%		80-1	24%	
460-00-4	4-Bromofluorobenzene	115%		71-1	32%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Report of Analysis

Client Sample ID: MH615-6(2.25)
Lab Sample ID: JB54616-6
Matrix: SO - Soil

Method: SW846 8270D SW846 3550C

Project: Sunoco - Marcus Hook Facility, PA

Date Sampled: 12/03/13
Date Received: 12/03/13
Percent Solids: 84.9

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch Run #1 P80510.D 1 12/05/13 JL 12/04/13 OP71150 EP3428

Run #2

Initial Weight Final Volume Run #1 31.9 g 1.0 ml

Run #2

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	37	13	ug/kg	
56-55-3	Benzo(a)anthracene	19.7	37	12	ug/kg	J
50-32-8	Benzo(a)pyrene	24.8	37	11	ug/kg	J
205-99-2	Benzo(b)fluoranthene	23.2	37	12	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	34.9	37	14	ug/kg	J
218-01-9	Chrysene	18.1	37	12	ug/kg	J
86-73-7	Fluorene	ND	37	12	ug/kg	
91-20-3	Naphthalene	ND	37	10	ug/kg	
85-01-8	Phenanthrene	ND	37	17	ug/kg	
129-00-0	Pyrene	37.5	37	14	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
4165-60-0	Nitrobenzene-d5	92%		10-1	10%	
321-60-8	2-Fluorobiphenyl	71%		17-1	10%	
1718-51-0	Terphenyl-d14	84%		30-1	24%	

ND = Not detected

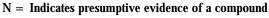
MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

 $B = \ Indicates \ analyte \ found \ in \ associated \ method \ blank$



Date Sampled: 12/03/13

Date Received: 12/03/13

Percent Solids: 84.9

Report of Analysis

| Client Sample ID: MH615-6(2.25) | Lab Sample ID: JB54616-6 | Matrix: SO - Soil | Method: SW846 8011 | SW846 8011 |

Project: Sunoco - Marcus Hook Facility, PA

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch Run #1 a YZ86549.D 1 12/07/13 AMA 12/06/13 M:OP36082 M:GYZ7427

Run #2

Initial Weight Final Volume
Run #1 30.8 g 50.0 ml

Run #2

CAS No. Compound Result RL MDL Units Q

106-93-4 1,2-Dibromoethane ND 2.9 1.1 ug/kg

CAS No. Surrogate Recoveries Run# 1 Run# 2 Limits

 460-00-4
 Bromofluorobenzene (S)
 138%
 61-167%

 460-00-4
 Bromofluorobenzene (S)
 92%
 61-167%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



4

Report of Analysis

Client Sample ID: MH615-6(2.25)

Lab Sample ID: JB54616-6 Date Sampled: 12/03/13 Matrix: SO - Soil Date Received: 12/03/13 Percent Solids: 84.9

Project: Sunoco - Marcus Hook Facility, PA

Metals Analysis

Analyte Result RL**MDL** Units DF Prep Analyzed By Method **Prep Method** Lead a mg/kg 1 SW846 3050B ² 24.4 0.9612/12/13 12/13/13 AMA SW846 6010C ¹ 0.16

(1) Instrument QC Batch: M:MA16557(2) Prep QC Batch: M:MP22244

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit MDL = Method Detection Limit U = Indicates a result < MDL

B = Indicates a result > = MDL but < RL



1

Report of Analysis

 Client Sample ID:
 MH615-7(5.0)

 Lab Sample ID:
 JB54616-7
 Date Sampled:
 12/05/13

 Matrix:
 SO - Soil
 Date Received:
 12/05/13

 Method:
 SW846 8260B
 Percent Solids:
 87.7

Project: Sunoco - Marcus Hook Facility, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D216055.D	1	12/10/13	CM	n/a	n/a	VD8825
Run #2	D216086.D	1	12/11/13	\mathbf{CM}	n/a	n/a	VD8827

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.1 g	10.0 ml	100 ul
Run #2	6.1 g	10.0 ml	2.0 ul

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	357	100	13	ug/kg	
108-88-3	Toluene	292000 a	5000	710	ug/kg	
100-41-4	Ethylbenzene	123000 a	5000	880	ug/kg	
1330-20-7	Xylene (total)	1210000 a	5000	890	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	100	34	ug/kg	
107-06-2	1,2-Dichloroethane	ND	100	32	ug/kg	
98-82-8	Isopropylbenzene	2670	500	15	ug/kg	
91-20-3	Naphthalene	587	500	18	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	1680	500	16	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	1380	500	22	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	ts	
1868-53-7	Dibromofluoromethane	95%	94%	59-1	30 %	
17060-07-0	1,2-Dichloroethane-D4	108%	107%	65-1	23%	
2037-26-5	Toluene-D8	117%	111%	80-1	24%	
460-00-4	4-Bromofluorobenzene	96%	98%	71-1		

(a) Result is from Run# 2

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

 $B = \ Indicates \ analyte \ found \ in \ associated \ method \ blank$



1

Report of Analysis

Client Sample ID: MH615-7(5.0)
Lab Sample ID: JB54616-7
Matrix: SO - Soil

Method: SW846 8270D SW846 3550C

Project: Sunoco - Marcus Hook Facility, PA

Date Sampled: 12/05/13 Date Received: 12/05/13 Percent Solids: 87.7

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch Run #1 P80570.D 1 12/07/13 AD 12/06/13 OP71216 EP3432

Run #2

Initial Weight Final Volume Run #1 30.7 g 1.0 ml

Run #2

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	25.5	37	13	ug/kg	J
56-55-3	Benzo(a)anthracene	ND	37	12	ug/kg	
50-32-8	Benzo(a)pyrene	52.5	37	11	ug/kg	
205-99-2	Benzo(b)fluoranthene	34.5	37	12	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	96.7	37	14	ug/kg	
218-01-9	Chrysene	ND	37	13	ug/kg	
86-73-7	Fluorene	ND	37	12	ug/kg	
91-20-3	Naphthalene	ND	37	10	ug/kg	
85-01-8	Phenanthrene	111	37	17	ug/kg	
129-00-0	Pyrene	339	37	14	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
4165-60-0	Nitrobenzene-d5	96%		10-1	10%	
321-60-8	2-Fluorobiphenyl	86%		17-1	10%	
1718-51-0	Terphenyl-d14	91%		30-1	24%	

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

 $B = \ Indicates \ analyte \ found \ in \ associated \ method \ blank$



Report of Analysis

Page 1 of 1

Date Sampled: 12/05/13

Client Sample ID: MH615-7(5.0) Lab Sample ID: JB54616-7

 Matrix:
 SO - Soil
 Date Received:
 12/05/13

 Method:
 SW846 8011
 SW846 8011
 Percent Solids:
 87.7

Project: Sunoco - Marcus Hook Facility, PA

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch Run #1 a BB53231.D 1 12/13/13 AMA 12/11/13 M:OP36152 M:GBB3111

Run #2

Initial Weight Final Volume Run #1 30.2 g 50.0 ml

Run #2

CAS No. Compound Result RL MDL Units Q

106-93-4 1,2-Dibromoethane ND 2.8 1.0 ug/kg

CAS No. Surrogate Recoveries Run# 1 Run# 2 Limits

 460-00-4
 Bromofluorobenzene (S)
 108%
 61-167%

 460-00-4
 Bromofluorobenzene (S)
 105%
 61-167%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected

MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound



4

Report of Analysis

Client Sample ID: MH615-7(5.0)
Lab Sample ID: JB54616-7
Matrix: SO - Soil

Date Sampled: 12/05/13 Date Received: 12/05/13 Percent Solids: 87.7

Project: Sunoco - Marcus Hook Facility, PA

Metals Analysis

Analyte Result RL**MDL** Units DF Prep Analyzed By Method **Prep Method** Lead a SW846 3050B ² 12.4 0.9312/12/13 12/13/13 AMA SW846 6010C ¹ 0.16mg/kg 1

(1) Instrument QC Batch: M:MA16557(2) Prep QC Batch: M:MP22244

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit MDL = Method Detection Limit U = Indicates a result < MDL

B = Indicates a result > = MDL but < RL





Misc.	Forms
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Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Chain of Custody (Accutest Labs of New England, Inc.)



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Client / Reporting Information Company Name TRATEC Treet Address IC(00 ANNAEW Dr. 4140 State 240 WEST CHITTER 7A 1938D Tropect Contact E-mail TRANSEC Fax# Sampler(s) Name(s) ASON CORRECT	City Project # 213-10 Client Purchase O	CO- MA 2353. Ze	Project Project RCUS	29-0200 www.a Informa	FAX: 73	om	9/3480					703L)	Ren		Analy	sis (s		ST COI	DE shee		35°	Matrix Codes
Company Name TRATEC TREE Address 1000 ANNAUW DR #140 State 2p WEST CHISTOR TA 1935D Troject Contact E-mail Fax# Samplar(s) Name(s) Phone #	Street City Project # 21340 Client Purchase 0	2353. 20	IRCUS State	Billing In	tion	1.575 (1 .19 4		37 0				1034	Re	quested	Analy	sis (s	ee TE	ST COI	DE shee			Matrix Codes
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JB54616: Chain of Custody Page 1 of 3







Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JBS	54616		Client:				Project:			
Date / Time Received: 12/	3/2013			Delivery N	Method:		Airbill #'s:			
Cooler Temps (Initial/Adjus	ted): #	1: (2.6/2.	<u>6); 0</u>							
Cooler Security 1. Custody Seals Present: 2. Custody Seals Intact:			. COC Pr	esent: s/Time OK	Y or ✓	N	Sample Integrity - Documentation 1. Sample labels present on bottles: 2. Container labeling complete:	<u>Y</u> •	or N	•
Cooler Temperature	Υ	or N					Sample container label / COC agree:	✓		
Temp criteria achieved: Cooler temp verification: Cooler media: No. Coolers:	V	IR Gun ce (Bag)					Sample Integrity - Condition 1. Sample recvd within HT: 2. All containers accounted for: 3. Condition of sample:	Y _✓ _✓	or N	
Quality Control Preservation	<u> Y</u>	or N	N/A				Sample Integrity - Instructions	Υ	or N	 N/A
 Trip Blank present / cooler: Trip Blank listed on COC: Samples preserved properly 		✓ ✓					1. Analysis requested is clear: 2. Bottles received for unspecified tests 3. Sufficient volume recvd for analysis:		□ ☑	
4. VOCs headspace free:			✓				4. Compositing instructions clear: 5. Filtering instructions clear:			∨
Accutest Laboratories						2235 US	Highway 130			Dayton, New Jersey
Accutest Laboratories V:732.329.0200						2235 US F: 732	Highway 130 .329.3499			Dayton, New Jersey www/accutest.com

JB54616: Chain of Custody

Page 2 of 3



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4	Client / Reporting Information				Project	Informa	tion										Requ	iestec	i Anai	ysis (see T	EST C	ODE s	heet)			Matrix Codes
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LINE		Sample Custody must be documented below each time sa										6508	sion, i	inclu	ding c	ourier	delive	Date Time: Received By:									
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JB54616: Chain of Custody Page 3 of 3

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CHAIN OF CUSTODY

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	Client / Reporting Information			Project	Informa	ition									Requ	ested	Analy	is (sec	TES	CODE	sheet			Matrix Codes
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krisi Phone		Fax# Client Purchase	Ded as #		City				State			Zip		-										AIR - Air SOL - Other Solid
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l				Collection	Ι			H	Numb	er of p	reserve	d Bottle	в Щ	1 8	= =									<u> </u>
Ascutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Date	Time	Sampled by	Matrix	# of bottles	Ÿ .	HNC3	H2SD4	NONE DI Wate	MEOH	ENCOR	B8270SL	V8011ED									LAB USE ONLY
1	MH615-1(3.0) i		12/3/13	2:15:00 PM	JC	so	1		T		1	П		Х									T	D21
2	MH615-2(3.0)		12/3/13	2:25:00 PM	JC	so	1		I	П	1			Х										D21
3	MH615-3(3.0)		12/3/13	2:35:00 PM	JC	so	1		L		1	Ш		X										D21
4	MH615-4(3.0)		12/3/13	JC	so	1				1			х										D21	
5	MH615-5(3.0) *		12/3/13	2:45:00 PM	JC	so	1	П	\prod		1	П		Х										D21
6	MH615-6(2.25) €—		12/3/13	2:50:00 PM	JC	so	1			Ш	1			Х										D21
7	MH615-7(5.0) 2		12/5/13	2:50:00 PM	JC	so	2				2	Ш		Х	Х									M24, SUB
								П	Τ.	П	T	П	T								T			
										П		П											T	
									T	П	Т	П	T											
			<u> </u>								1	П											1	
	Tumaround Time (Business days)						Data	Delive	rable	Infon	mation								Com	nents / S	pecial le	structions		
	_	Approved By (Accu	rtest PM): / Date:				al "A" (Le						Catego			Send :	300ml f	ог В827)SL/m	et and 6	Oml for	V8011E	B. Loca	ations noted.
	Std. 10 Business Days 5 Day RUSH	***************************************					lai "B" (Le Level 3+4			Ļ		rASP : ate Fo	Catego	ory B	Ī									
	3 Day EMERGENCY	*********				IJ Reduc		,		F	_	DD Fo			ļ									
	2 Day EMERGENCY			Ì	A.	commerci				Ď			REDT:	2										
Ī	1 Day EMERGENCY								Resu	ults O	nty													
	X other Due 12/17/2013										QC Su			O des										
Emei	gency & Rush T/A data available VIA Lablink		Sample Custor	ly must be do	umente		NJ Reduce each tim									er deli	very.							
	· · /	12-6-13 1 FEDEX							uished			F	7	,			Date Time	101	9	Received E	yr _	3	2/	
		ate Time:	Received By:	· e ^			-	4 Relinau	ished	By:			<u></u>				Date Time			Z Received E	iy:		£	
3						4 4						Ţ												
Relinq 5	uished by:	ate Time:	Received By: 5				ľ	ustod						Intact Not intact	P	reserve	where a	рисавіє				On lice	. Sooler	3.5°
										37	75	-												

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Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JB5461	6 Client:	ACNJ	Immediate Client Ser	vices Action Required:	No
Date / Time Received: 12/9/20	013	Delivery Method:	Client Service Act	tion Required at Login:	No
Project: SUB		No. Coolers:	2 Airbill #'s:		
Cooler Security Y Cooler Security 1. Custody Seals Present: ✓ 2. Custody Seals Intact: ✓	3. COC P		Sample Integrity - Documentation 1. Sample labels present on bottles: 2. Container labeling complete:	<u>Y</u> or <u>N</u> ✓ □	
1. Temp criteria achieved: 2. Cooler temp verification: 3. Cooler media: Quality Control Preservation	Y or N N/A	-	3. Sample container label / COC agree: Sample Integrity - Condition 1. Sample recvd within HT: 2. All containers accounted for: 3. Condition of sample:	✓ □ Y or N ✓ □ Intact	
Trip Blank present / cooler: Trip Blank listed on COC: Samples preserved properly: VOCs headspace free:			Sample Integrity - Instructions 1. Analysis requested is clear: 2. Bottles received for unspecified tests 3. Sufficient volume recvd for analysis: 4. Compositing instructions clear: 5. Filtering instructions clear:	Y or N V	N/A
Comments					
Accutest Laboratories V:508.481.6200			center West, Bldg One 481,7753		borough, M/

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